



DOCKET NO. P05827
SERIAL NO. 10/803,273
PATENT

IN THE CLAIMS

Please amend the claims as follows.

1. (Currently Amended) A method for manufacturing an isolation trench in a semiconductor device, said method comprising the steps of:

- providing a substrate for said semiconductor device;
- etching a trench in said substrate;
- growing a silicon dioxide liner in said trench;
- filling said trench with polysilicon material; [[and]]
- depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner; and
- etching the deposited polysilicon material so as to leave a portion of the deposited polysilicon material that is over the trench and that extends laterally over at least one edge of the trench.

2. (Currently Amended) The method as set forth in Claim 1 wherein said step of depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner comprises the step of:

- forming said polysilicon material that is placed on top of said filled trench with portions that extend laterally over [[an]] the at least one edge of said filled trench.

3. (Currently Amended) The method as set forth in Claim 1 wherein said step of growing a silicon dioxide liner in said trench further comprises the step of:

growing said silicon dioxide liner on horizontal portions of said substrate that are adjacent to ~~[[an]]~~ the at least one edge of said filled trench.

4. (Currently Amended) The method as set forth in Claim 3 wherein ~~said step of depositing the portion of the polysilicon material on top of said filled trench to protect said silicon dioxide liner comprises the step of: forming said polysilicon material that is placed on top of said filled trench with portions that~~ extends laterally over said horizontal portions of said substrate at ~~[[an]]~~ the at least one edge of said filled trench that is covered with the silicon dioxide liner.

5. (Original) The method as set forth in Claim 4 further comprising the step of:
placing a layer of oxidation material over said polysilicon material that is placed on top of said filled trench during a subsequent oxidation process.

6. (Original) The method as set forth in Claim 1 further comprising the step of:
selecting an initial height of said polysilicon material that is deposited on top of said filled trench that is sufficient for said polysilicon material to survive one of: at least one subsequent etch procedure and at least one subsequent oxidation procedure.

7. (Currently Amended) A method for manufacturing an isolation trench in a semiconductor device, said method comprising the steps of:

- providing a monocrystalline silicon substrate layer for said semiconductor device;
- applying a silicon dioxide layer over said monocrystalline silicon substrate layer;
- applying a layer of photoresist over said silicon dioxide layer;
- exposing and developing said photoresist from a trench area;
- etching portions of said ~~silicon~~ silicon dioxide layer in said trench area;
- removing said photoresist;
- etching a trench in said trench area of said monocrystalline silicon substrate layer;
- etching portions of said silicon dioxide layer to pull back said silicon dioxide layer from [[an]] at least one edge of said trench;
- growing a silicon dioxide liner in said trench;
- filling said trench with polysilicon material; [[and]]
- depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner; and
- etching the deposited polysilicon material so as to leave a portion of the deposited polysilicon material that is over the trench and that extends laterally over the at least one edge of the trench.

8. (Currently Amended) The method as set forth in Claim 7 wherein said step of depositing polysilicon material on top of said filled trench to protect said silicon dioxide liner comprises the step of:

forming said polysilicon material that is placed on top of said filled trench with portions that extend laterally over [[an]] the at least one edge of said filled trench.

9. (Currently Amended) The method as set forth in Claim 7 wherein said step of growing a silicon dioxide liner in said trench further comprises the step of:

growing said silicon dioxide liner on horizontal portions of said substrate that are adjacent to [[an]] the at least one edge of said filled trench.

10. (Currently Amended) The method as set forth in Claim 9 wherein ~~said step of depositing the portion of the polysilicon material on top of said filled trench to protect said silicon dioxide liner comprises the step of: forming said polysilicon material that is placed on top of said filled trench with portions that extend~~ laterally over said horizontal portions of said substrate at [[an]] the at least one edge of said filled trench that is covered with the silicon dioxide liner.

11. (Original) The method as set forth in Claim 10 further comprising the step of:
placing a layer of oxidation material over said polysilicon material that is placed on top of said filled trench during a subsequent oxidation process.

12. (Original) The method as set forth in Claim 7 further comprising the step of:
selecting an initial height of said polysilicon material that is deposited on top of said filled trench that is sufficient for said polysilicon material to survive one of: at least one subsequent etch procedure and at least one subsequent oxidation procedure.

13. (Currently Amended) An isolation trench for use in a semiconductor device comprising:

a substrate of said semiconductor device;
a trench etched in said substrate;
a silicon dioxide liner grown in said trench;
polysilicon material filling said trench; and
polysilicon material deposited on top of said filled trench to protect said silicon dioxide liner and etched so as to leave a portion of the deposited polysilicon material that is over the trench and that extends laterally over at least one edge of the trench.

14. (Currently Amended) The isolation trench as set forth in Claim 13 wherein said polysilicon material that is deposited on top of said filled trench to protect said silicon dioxide liner comprises:

a portion of said polysilicon material that extends laterally over [[an]] the at least one edge of said filled trench.

15. (Currently Amended) The isolation trench as set forth in Claim 13 further comprising silicon dioxide liner grown on horizontal portions of said substrate that are adjacent to [[an]] the at least one edge of said filled trench.

16. (Currently Amended) The isolation trench as set forth in Claim 15 wherein said the portion of the polysilicon material ~~that is deposited on top of said filled trench to protect said silicon dioxide liner comprises: a portion of polysilicon material that~~ extends laterally over said horizontal portions of said substrate at [[an]] the at least one edge of said filled trench that is covered with the silicon dioxide liner.

17. (Original) The isolation trench as set forth in Claim 16 further comprising a layer of oxidation material placed over said polysilicon material that is placed on top of said filled trench.

18. (Original) The isolation trench as set forth in Claim 13 wherein said polysilicon material that is deposited on top of said filled trench has an initial height that is sufficient for said polysilicon material to survive one of: at least one subsequent etch procedure and at least one subsequent oxidation procedure.

19. (Currently Amended) The isolation trench as set forth in Claim 13 wherein said polysilicon material that is deposited on top of said filled trench is capable of preventing expansion of the silicon dioxide liner during oxidation by expanding vertically and laterally when oxidized.

20. (Original) The isolation trench as set forth in Claim 13 wherein said polysilicon material that is deposited on top of said filled trench does not create stress in said substrate.